MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
KINDERGARTEN

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Make a model to represent a given whole number 0 through 20.	1M-F1-01 1M-R4
	2	Identify orally a whole number represented by a model with a word name and symbol 0 through 20. (Say 3 and write number 3 when presented with three objects.)	1M-F1-02 1M-R4
	3	Count aloud, forward to 20 or backward from 10, in consecutive order (0 through 20).	*
	4	Identify whole numbers through 20 in or out of order.	1M-F2-01
	5	Write whole numbers through 20 in or out of order.	1M-F2-02
	6	Construct equivalent forms of whole numbers, using manipulatives, through 10 (e.g., □□+□□ =□□□+□).	1M-F1-03 1M-R2 1M-R3
	7	Compare two whole numbers through 20.	1M-F2-03 1M-R1
	8	Recognize the ordinal numbers through fifth (e.g., first, second, third).	*
	9	Order three or more whole numbers through 20 (least to greatest or greatest to least).	1M-F2-03 1M-R1
	10	Identify penny, nickel, dime, quarter, and dollar by using manipulatives or pictures.	1M-F2-07
2. Numerical Operations	1	Model addition through sums of 10 using manipulatives.	1M-F3-01
	2	Model subtraction with minuends of 10 using manipulatives.	1M-F3-02
	3	Select the operation to solve word problems using numbers 0 through 9.	1M-F3-06
	4	Solve word problems presented orally using addition or subtraction with numbers through 9.	1M-F7-02
	5	Identify the symbols: +, -, =.	3M-F5-01
	6	Use grade-level appropriate mathematical terminology.	*
3. Estimation	1	Solve problems using a variety of mental computations and reasonable estimations.	1M-F4-03

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
KINDERGARTEN

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01 2M-R2
	2	Interpret a pictograph.	2M-F2-03 2M-R3
	3	Answer questions about a pictograph.	2M-F2-03 2M-R3
	4	Formulate questions based on data displayed in graphs, charts, and tables.	2M-F2-07
	5	Solve problems based on simple graphs, charts, and tables.	2M-E4-08
2. Probability		*(Grades 2-HS)*	
3. Discrete Mathematics – Systematic Listing and Counting	1	Make arrangements that represent the number of combinations that can be formed by pairing items taken from 2 sets, using manipulatives (e.g., How many outfits can one make with 2 different color shirts and 2 different pairs of pants?).	5M-E4-02
4. Vertex-Edge Graphs	1	Color pictures with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).	*

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
KINDERGARTEN

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate orally a grade-level appropriate pattern.	3M-F1-02 3M-R1
	2	Extend simple repetitive patterns using manipulatives.	3M-F1-04 3M-R1
	3	Create grade-level appropriate patterns.	3M-F1-01 3M-R1
2. Functions and Relationships		*(Grades 2-HS)*	
3. Algebraic Representations		*(Grades 1-HS)*	
4. Analysis of Change	1	*(Grades 1-HS)*	

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Identify 2-dimensional shapes by attribute (size, shape, number of sides).	4M-F1-01 4M-R1
	2	Identify concepts and terms of position and size in contextual situations: • Inside/outside, • Above/below/between, • Smaller/larger, and • Longer/shorter.	*
	3	Identify shapes in different environments (e.g., nature, buildings, classroom).	4M-R2
2. Transformation of Shapes		*(Grades 1-HS)*	
3. Coordinate Geometry		*(Grades 3-HS)*	

4. Measurement - Units of Measure Geometric Objects	1	Verbally compare objects according to observable and measurable attributes.	4M-F1-05 4M-F1-04 5M-F1-01 4M-R1 6M-R1
	2	Communicate orally how different attributes of an object can be measured.	5M-F1-01 5M-R1
	3	Order objects according to observable and measurable attributes.	5M-F1-01 5M-R2

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	*(Grades 1-HS)*	
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Sort objects according to observable attributes.	6M-R1
	2	Provide rationale for classifying objects according to observable attributes (color, size, shape, weight, etc.).	6M-R2

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 1

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Make a model to represent a given whole number 0 through 100.	1M-F1-01
	2	Identify a whole number represented by a model with a word name and symbol 0 through 100.	1M-F1-02
	3	Count aloud, forward or backward, in consecutive order (0 through 100).	*
	4	Identify whole numbers through 100 in or out of order.	1M-F2-01
	5	Write whole numbers through 100 in or out of order.	1M-F2-02
	6	Construct equivalent forms of whole numbers, using manipulatives or symbols, through 99 (e.g., 15 + 5 = 10 + 10).	1M-F1-03
	7	State verbally whole numbers, through 100, using correct place value (e.g., A student will read 84 as eight tens and four ones.).	1M-F2-06
	8	Construct models to represent place value concepts for the one's and ten's places.	1M-F2-04
	9	Apply expanded notation to model place value through 99 (e.g., 37 = 3 groups of ten + 7 units).	1M-F2-05
	10	Identify odd and even whole numbers through 100.	*
	11	Compare two whole numbers through 100.	1M-F2-03
	12	Use ordinal numbers through tenth.	*
	13	Order three or more whole numbers through 100 (least to greatest or greatest to least).	1M-F2-03
	14	Make models that represent given fractions (halves).	1M-F1-04
	15	Identify in symbols and in words a model that is divided into equal fractional parts (halves).	1M-F1-05 1M-F1-06
	16	Identify money by name and value: penny, nickel, dime, quarter, and one dollar.	1M-F2-07
	17	Count money through $1.00 using coins.	1M-F2-07
	18	Identify the value of a collection of coins using the symbols ¢ and $.	1M-F2-07
2. Numerical Operations	1	Demonstrate the process of addition through sums of 20 using manipulatives.	1M-F3-01
	2	Demonstrate the process of subtraction with minuends of 20 using manipulatives.	1M-F3-02
	3	State addition facts for sums through 18 and subtraction for differences with minuends through 9 or less.	1M-F4-01
	4	Add one- and two-digit whole numbers without regrouping.	1M-F4-02

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 1

	5	Subtract one- and two-digit whole numbers without regrouping.	1M-F4-02
	6	Select the grade-level appropriate operation to solve word problems.	1M-F3-06 1M-F7-01
	7	Solve word problems using addition and subtraction of 2-digit numbers without regrouping.	1M-F7-02
	8	Count by multiples to show the process of multiplication (10s, 5s, or 2s).	1M-F3-03 3M-F4-01 3M-F4-02
	9	Demonstrate families of equations for addition and subtraction through 18.	1M-F4-01
	10	Demonstrate the identity and commutative properties of addition through 18.	*
	11	Identify addition and subtraction as inverse operations.	1M-E2-03
	12	Apply the symbols: +, -, =.	3M-F5-01
	13	Use grade-level appropriate mathematical terminology.	*
	14	Demonstrate addition of fractions with like denominators (halves) using models.	1M-F6-01
	15	Demonstrate subtraction of fractions with like denominators (halves) using models.	1M-F6-01
	16	Add and subtract money without regrouping using manipulatives and paper and pencil, through 99¢.	1M-F6-02
3. Estimation	1	Solve problems using a variety of mental computations and reasonable estimation.	1M-F4-03
	2	Estimate the measurement of an object using U.S. customary standard and non-standard units of measurement.	1M-F5-02 5M-F3-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 1

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Make a simple pictograph or tally chart with appropriate labels from organized data.	2M-F2-01 2M-F2-04 2M-F3-02
	3	Interpret pictographs using terms such as most, least, equal, more than, less than, and greatest.	2M-F2-03
	4	Answer questions about pictographs using terms such as most, least, equal, more than, less than, and greatest.	2M-F1-03 2M-F2-03
	5	Formulate questions based on graphs, charts, and tables.	2M-F1-04 2M-F2-07
	6	Solve problems using graphs, charts, and tables.	2M-F2-08
2. Probability		*(Grades 2-HS)*	
3. Discrete Mathematics – Systematic Listing and Counting	1	Make arrangements that represent the number of combinations that can be formed by pairing items taken from 2 sets, using manipulatives (e.g., How many ice cream cones can one make with 2 different types of ice cream and 2 different types of cones?).	2M-E4-02 5M-F4-01
4. Vertex-Edge Graphs	1	Color pictures with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 1

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate a grade-level appropriate pattern (e.g., ♦,▽,♥ Repeat this complete pattern.)	3M-F1-02 3M-F1-03
	2	Extend a simple grade-level appropriate repetitive pattern (e.g., ↑, ↓, ↑, ↓, ↑, ___, ___, ___).	3M-F1-04 6M-F2-01
	3	Create grade-level appropriate patterns.	3M-F1-01
2. Functions and Relationships		*(Grades 2-HS)*	
3. Algebraic Representations	1	Use variables in contextual situations.	3ME3-01
	2	Find the missing sum or difference in number sentences for sums and minuends through 9 (e.g., $2 + 5 =$ _).	3M-F6-01
4. Analysis of Change	1	Identify the change in a variable over time (e.g., an object gets taller, colder, heavier, etc.).	3M-F3-01
	2	Make simple predictions based on a variable (e.g., select next stage of plant growth).	3M-F3-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 1

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Use the words vertex and side when describing simple 2-dimensional geometric shapes.	4M-E1-02
	2	Identify 2-dimensional shapes by attribute (size, shape, number of sides, vertices).	4M-F1-01
	3	Use concepts and terms of position and size in contextual situations: • Inside/outside, • Left/right, • Above/below/between, • Smaller/larger, and • Longer/shorter.	*
	4	Name common 2-dimensional shapes (square, rectangle, triangle, circle).	*
	5	Draw 2-dimensional shapes (square, rectangle, triangle, circle).	4M-F1-02
	6	Recognize where a line of symmetry divides a 2-dimensional shape into mirror images.	*
2. Transformation of Shapes	1	Recognize same shape in different positions (slide/translations).	4M-E3-01
3. Coordinate Geometry		*(Grades 3-HS)*	
4. Measurement - Units of Measure Geometric Objects	1	Compare the measurable characteristics of two objects (e.g., length, weight, size).	5M-F1-01
	2	Select the appropriate measure of accuracy: • length – inches, feet, • capacity/volume – cups, gallons, • mass/weight – pounds.	5M-F2-01
	3	Tell time to the hour using analog and digital clocks.	5M-F2-05
	4	Name the days of the week for yesterday, today, and tomorrow (e.g., If today is Wednesday, what day will it be tomorrow?).	5M-F2-06
	5	Name the 12 months of the year in proper order, starting with January.	5M-F2-06
	6	Name the 7 days of the week in proper order, starting with Sunday.	5M-F2-06
	7	Measure a given object using the appropriate unit of measure: • length – inches, feet and yards, • capacity/volume – cups, gallons, and • mass/weight – pounds.	5M-F2-03 5M-F2-04 5M-E1-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 1

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Create problems based on contextual situations (addition facts up to 18 and subtraction from 9).	6M-F1-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	List the quantitative components found in word problems.	5M-F1-01
	2	Provide rationale for classifying objects according to observable attributes (color, size, shape, weight, etc.).	5M-F1-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 2

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Make a model to represent a given whole number 0 through 999.	1M-F1-01
	2	Identify a whole number represented by a model with a word name and symbol 0 through 999.	1M-F1-02
	3	Count aloud, forward or backward, in consecutive order (0 through 999).	*
	4	Identify whole numbers through 999 in or out of order.	1M-F2-01
	5	Write whole numbers through 999 in or out of order.	1M-F2-02
	6	State equivalent forms of whole numbers using multiples of 10 through 1,000 (430 + 200 = 600 + 30).	1M-F1-03
	7	State verbally whole numbers, through 999, using correct place value (e.g., A student will read 528 as five hundreds, two tens, and eight ones.).	1M-F2-06
	8	Construct models to represent place value concepts for the one's, ten's, and hundred's places.	1M-F2-04
	9	Apply expanded notation to model place value through 999 (e.g., 378 = 3 hundreds + 7 tens + 8 ones).	1M-F2-05
	10	Identify odd and even (including 0) whole numbers through 999.	*
	11	Compare two whole numbers through 999.	1M-F2-03
	12	Use ordinal numbers.	*
	13	Order three or more whole numbers through 999 (least to greatest or greatest to least).	1M-F2-03
	14	Make models that represent given fractions (halves and fourths).	1M-F1-04
	15	Identify in symbols and words a model that is divided into equal fractional parts (halves and fourths).	1M-F1-05
	16	Count money through $5.00 using manipulatives and pictures of bills and coins.	1M-F2-07
	17	Identify the value of a collection of money using the symbols ¢ and $ through $5.00.	1M-F2-07
	18	Use decimals through hundredths in contextual situations with money.	1M-E1-02
	19	Compare two decimals using money, through hundredths, using models, illustrations, or symbols.	1M-E1-01
	20	Distinguish the equivalency among decimals, fractions and percents (e.g., half-dollar = 50¢ = 50%).	1M-E5-02

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 2

2. Numerical Operations	1	Demonstrate the process of addition through two three-digit whole numbers, using manipulatives.	1M-F3-01
	2	Demonstrate the process of subtraction using manipulatives with two-digit whole numbers.	1M-F3-02
	3	State addition and subtraction facts.	1M-F4-01
	4	Add one- and two-digit whole numbers with regrouping.	1M-F4-02
	5	Subtract one- and two-digit whole numbers with regrouping.	1M-F4-02
	6	Add 3 one- or two-digit addends.	1M-F4-02
	7	Select the grade-level appropriate operation to solve word problems.	1M-F3-06 1M-F7-01
	8	Solve word problems using addition and subtraction of two 2-digit numbers, with regrouping AND two 3-digit numbers without regrouping.	1M-F3-05 1M-F7-02
	9	Count by multiples of three.	3M-F4-01 3M-F4-02
	10	State multiplication facts: 2s, 5s and 10s.	1M-F3-01 1M-F5-01
	11	Demonstrate the associative property of addition [e.g., (3 + 5) + 4 = 3 + (5 + 4)].	*
	12	Apply grade-level appropriate properties to assist in computation.	*
	13	Apply the symbols: +, -, x, ÷, =, ≠, <, >, **%.**	3M-F5-01
	14	Use grade-level appropriate mathematical terminology.	*
	15	Demonstrate addition of fractions with like denominators (halves and fourths) using models.	1M-F6-01
	16	Demonstrate subtraction of fractions with like denominators (halves and fourths) using models.	1M-F6-01
	17	Add and subtract money without regrouping using manipulatives and paper and pencil, through $5.00.	1M-F6-02
3. Estimation	1	Solve problems using a variety of mental computations and reasonable estimation.	1M-F4-03
	2	Estimate the measurement of an object using U.S. customary standard and non-standard units of measurement.	5M-F3-01
	3	Compare an estimate to the actual measure.	5M-F3-02
	4	Evaluate the reasonableness of an estimate.	1M-F7-03 5M-F3-03

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 2

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Make a simple pictograph or tally chart with appropriate labels from organized data.	2M-F2-01 2M-F2-04 2M-F3-02
	3	Interpret pictographs using terms such as most, least, equal, more than, less than, and greatest.	2M-F2-03
	4	Answer questions about a pictograph using terms such as most, least, equal, more than, less than, and greatest.	2M-F1-03 2M-F2-03
	5	Formulate questions based on graphs, charts, and tables.	2M-F1-04 2M-F2-07
	6	Solve problems using graphs, charts, and tables.	2M-F2-08
2. Probability	1	Name the possible outcomes for a probability experiment.	2M-F3-03
	2	Predict the most likely or least likely outcome in probability experiments (e.g., Predict the chance of spinning one of the 2 colors on a 2-colored spinner.).	2M-F3-04
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-F3-04
	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-F3-05
	6	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01
3. Discrete Mathematics – Systematic Listing and Counting	1	Make arrangements that represent the number of combinations that can be formed by pairing items taken from 2 sets, using manipulatives (e.g., How many types of sandwiches can one make with 3 different types of fillings and 2 types of bread if only one type of bread and 1 kind of filling is used for each sandwich?).	5M-F4-01 2M-E4-02
4. Vertex-Edge Graphs	1	Color pictures with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 2

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate a grade-level appropriate pattern, using symbols or numbers (e.g., ∇, O, Δ, ∇, O, Δ, ∇, ___, ___, ___).	3M-F1-02 3M-F1-03 3M-F4-01
	2	Extend a grade-level appropriate repetitive pattern (e.g., 12, 22, 32, ___, ___, ___).	3M-F1-04 6M-F2-01
	3	Create grade-level appropriate patterns.	3M-F1-01
2. Functions and Relationships	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model, and frames and arrows).	3M-E4-01 3M-E4-02
3. Algebraic Representations	1	Use variables in contextual situations.	3M-E3-01
	2	Find the missing element (addend, subtrahend, minuend, sum, and difference) in addition and subtraction number sentences for sums through 18 and minuends through 9 (e.g., 13 - _ = 8).	3M-F6-01
4. Analysis of Change	1	Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).	3M-F3-01
	2	Make simple predictions based on a variable (e.g., a child's height from year to year).	3M-F3-01

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Compare attributes of 2-dimensional shapes (square, rectangle, triangle, and circle).	4M-F1-04
	2	Recognize congruent shapes.	4M-E2-06
	3	Recognize line(s) of symmetry for a 2-dimensional shape.	*
2. Transformation of Shapes	1	Recognize same shape in different positions (flip/reflection).	4M-E3-01
3. Coordinate Geometry		*(Grades 3-HS)*	

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

4. Measurement - Units of Measure Geometric Objects	1	Identify the type of measure (e.g., weight, height, and time) for each attribute of an object.	5M-F1-02
	2	Select the appropriate U.S. customary measure of accuracy: • length – inches, feet, yards, miles, • capacity/volume – pints, quarts, and • mass/weight – ounces.	5M-F2-01
	3	Tell time to the quarter hour using analog and digital clocks.	5M-F2-05
	4	Determine the passage of time using units of days and weeks within a month using a calendar.	5M-F2-06
	5	Select the appropriate tool to measure the given characteristic of an object.	5M-F2-02
	6	Measure a given object using the appropriate unit of measure: • length – inches, miles, • capacity/volume – pints, quarts, and • mass/weight – ounces.	5M-F2-01 5M-F2-03 5M-E1-01
	7	State equivalent relationships: • 12 inches = 1 foot, • 60 minutes = 1 hour, • 24 hours = 1 day, • 7 days = 1 week, • 12 months = 1 year, • 100 pennies = 1 dollar, • 10 dimes = 1 dollar, and • 4 quarters = 1 dollar.	5M-F2-07

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Create contextual problems that require addition or subtraction with one- or two-digit numbers.	6M-F1-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Identify the concepts *some, every*, and *many* within the context of logical reasoning.	6M-F4-01
	2	Identify the concepts *all* and *none* within the context of logical reasoning.	6M-F4-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 3

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Read whole numbers in contextual situations (through six-digit numbers).	1M-F2-01
	2	Identify six-digit whole numbers in or out of order.	1M-F2-01
	3	Write whole numbers through six-digits in or out of order.	1M-F2-02
	4	State whole numbers, through six-digits, with correct place value, by using models, illustrations, symbols, or expanded notation (e.g., 53,941 = 50,000 + 3,000 + 900 + 40 +1).	1M-F2-04 1M-F2-05
	5	Construct models to represent place value concepts for the one's, ten's, and hundred's places.	1M-F2-04
	6	Apply expanded notation to model place value through 9,999 (e.g., 5,378 = 5,000 + 300 + 70 + 8).	1M-F2-05
	7	Sort whole numbers into sets containing only odd numbers or only even numbers.	1M-E4-04
	8	Compare two whole numbers, through six-digits.	1M-F2-03
	9	Order three or more whole numbers through six-digit numbers (least to greatest, or greatest to least).	1M-F2-03
	10	Make models that represent proper fractions (halves, thirds, fourths, eighths, and tenths).	1M-F1-04
	11	Identify symbols, words, or models that represent proper fractions (halves, thirds, fourths, eighths and tenths).	1M-F1-05 1M-F1-06
	12	Use proper fractions in contextual situations.	1M-E1-03
	13	Compare two proper fractions with like denominators.	1M-E1-01
	14	Order three or more proper fractions with like denominators (halves, thirds, fourths, eighths, and tenths).	1M-E1-01
	15	Count amounts of money through $20.00 using pictures or actual bills and coins.	1M-F2-07
	16	Use decimals through hundredths in contextual situations.	1M-E1-03
	17	Compare two decimals, through hundredths, using models, illustrations, or symbols.	1M-E1-01
	18	Order three or more decimals, through hundredths, using models, illustrations, or symbols.	1M-E1-01
	19	Determine the equivalency among decimals, fractions, and percents (e.g., half-dollar = 50¢ = 50% and 1/4 = 0.25 = 25%).	1M-E5-02

	20	Identify whole-number factors and/or pairs of factors for a given whole number through 24.	1M-E4-01 1M-E5-03
	21	Determine multiples of a given whole number with products through 24 (skip counting).	1M-E4-01
2. Numerical Operations	1	Demonstrate the process of subtraction using manipulatives through three-digit whole numbers.	1M-F3-05
	2	Add two three-digit whole numbers.	1M-F4-02
	3	Subtract two three-digit whole numbers.	1M-F4-02
	4	Add a column of numbers.	1M-F4-02
	5	Select the grade-level appropriate operation to solve word problems.	1M-F3-06
	6	Solve word problems using grade-level appropriate operations and numbers.	1M-F3-07 1M-F3-08 1M-F7-02
	7	Demonstrate the process of multiplication as repeatedly adding the same number, counting by multiples, combining equal sets, and making arrays.	1M-F3-03 4M-F1-06 1M-E2-01
	8	Demonstrate the process of division with one-digit divisors (separating elements of a set into smaller equal sets, sharing equally, or repeatedly subtracting the same number).	1M-F3-04 1M-E2-02
	9	Demonstrate families of equations for multiplication and division through 9s.	1M-F5-01
	10	State multiplication and division facts through 9s.	1M-F5-01
	11	Demonstrate the commutative and identity properties of multiplication.	*
	12	Identify multiplication and division as inverse operations.	1M-E2-03
	13	Apply grade-level appropriate properties to assist in computation.	*
	14	Apply the symbols: ×, ÷, /, *, %, and the grouping symbols ( ) and ",".	3M-F5-01
	15	Use grade-level appropriate mathematical terminology.	*
	16	Add or subtract fractions with like denominators (halves, thirds, fourths, eighths, and tenths) appropriate to grade level.	1M-F6-01
	17	Apply addition and subtraction in contextual situations, through $20.00.	1M-F6-02
3. Estimation	1	Solve grade-level appropriate problems using estimation.	1M-F5-02 1M-E6-01 1M-E6-02
	2	Estimate length and weight using U.S. customary units.	5M-E3-01
	3	Record estimated and actual linear measurements for real-life objects (e.g., length of fingernail; height of desk).	1M-E6-03 5M-E3-02

	4	Compare estimations of appropriate measures to the actual measures.	5M-E1-03
	5	Evaluate the reasonableness of estimated measures.	1M-F7-03

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Construct a horizontal bar, vertical bar, pictograph, or tally chart with appropriate labels and title from organized data.	2M-F2-01 2M-F2-04 2M-F3-02
	3	Interpret data found in line plots, pictographs, and single-bar graphs (horizontal and vertical).	2M-F2-02 2M-F2-03
	4	Answer questions based on data found in line plots, pictographs, and single-bar graphs (horizontal and vertical).	2M-F2-02 2M-F2-03
	5	Formulate questions based on graphs, charts, and tables to solve problems.	2M-F2-07
	6	Solve problems using graphs, charts and tables.	2M-F2-08
2. Probability	1	Name the possible outcomes for a probability experiment.	2M-F3-03 2M-E4-01
	2	Make predictions about the probability of events being more likely, less likely, equally likely or unlikely.	2M-E5-05 2M-F3-04
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-F3-04 2M-E5-01
	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-F3-05
	6	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01
3. Discrete Mathematics – Systematic Listing and Counting	1	Make a diagram to represent the number of combinations available when 1 item is selected from each of 3 sets of 2 items (e.g., 2 different shirts, 2 different hats, 2 different belts).	5M-F4-01 2M-E4-02
4. Vertex-Edge Graphs	1	Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 3

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.	3M-F1-02 3M-F1-03 3M-F4-01
	2	Extend a grade-level appropriate repetitive pattern (e.g., 5, 10, 15, 20, . . . rule: add five or count by five's).	3M-F1-04 3M-F2-01 6M-F2-01
	3	Solve grade-level appropriate pattern problems.	3M-F1-05 5M-E6-01
2. Functions and Relationships	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model, and frames and arrows).	3M-E4-01 3M-E4-02
3. Algebraic Representations	1	Use variables in contextual situations.	3M-E3-01
	2	Solve equations with one variable using missing addends to sums of 18 (e.g., $\Box + 9 = 18$, $9 + \Box = 18$); and using minuend through 18 (e.g., $18 - \Box = 9$, $18 - 9 = \Box$).	3M-F6-01
4. Analysis of Change	1	Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).	3M-F3-01
	2	Make simple predictions based on a variable (e.g., increases in allowance as you get older).	3M-F3-01

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 3

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Build geometric figures with other common shapes (e.g., tangrams, pattern blocks, geoboards).	4M-F2-01
	2	Name concrete objects and pictures of 3-dimensional solids (cones, spheres, and cubes).	4M-F1-03
	3	Describe relationships between 2-dimensional and 3-dimensional objects (squares/cubes, circles/spheres, triangles/cones).	*
	4	Recognize similar shapes.	4M-E2-06
	5	Identify a line of symmetry in a 2-dimensional shape.	4M-E3-03
2. Transformation of Shapes	1	Recognize same shape in different positions (turn/rotation).	4M-E3-02
3. Coordinate Geometry	1	Identify points in the first quadrant of a grid using ordered pairs.	2M-F2-05
4. Measurement - Units of Measure Geometric Objects	1	Select the appropriate measure of accuracy: • length – centimeters, meters, kilometers, • capacity/volume – liters, and • mass/weight – grams.	5M-F2-01
	2	Tell time with one-minute precision (analog).	5M-F2-05
	3	Determine the passage of time across months (units of days, weeks, months) using a calendar.	5M-F2-06
	4	Measure a given object using the appropriate unit of measure: • length – centimeters, millimeters, meters, kilometers, • capacity/volume – liters, and • mass/weight – grams.	5M-F2-04 5M-E1-01
	5	Record temperatures to the nearest degree in degrees Fahrenheit and degrees Celsius as shown on a thermometer.	5M-F2-09
	6	Compare units of measure to determine more or less relationships for: • length – inches to feet; centimeters to meters, • time – minutes to hours; hours to days; days to weeks; months to years, and • money – pennies, nickels, dimes, quarters, and dollars.	5M-F2-07

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

	7	Determine relationships for: • volume – cups and gallons, • weight – ounces and pounds, and • money – extend to amounts greater than one dollar.	5M-F2-03 5M-F2-08
	8	Compare the length of two objects using U.S. customary or metric units.	5M-F2-08
	9	Determine the perimeter using a rectangular array.	4M-E4-01 4M-E4-02 5M-E4-01
	10	Represent area using a rectangular array.	4M-E4-01 5M-E4-01

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.	6M-F3-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Draw conclusions based on existing information (e.g., All students in Ms. Dean's 1st grade class are less than 7 years old. Rafael is in Ms. Dean's class. Conclusion: Rafael is less than 7 years old.).	6M-F2-01 6M-F2-02

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 4

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	PO	ITEM DESCRIPTION	
1. Number Sense	1	Read whole numbers in contextual situations.	1M-E1-03
	2	Identify whole numbers in or out of order.	1M-E1-03
	3	Write whole numbers in or out of order.	1M-E1-03
	4	State place values for whole numbers (e.g., In the number 203,495 what is the value of the 2?).	1M-E1-02
	5	Construct models to represent place value concepts for the one's, ten's, hundred's, and thousand's places.	1M-F2-04
	6	Apply expanded notation to model place value (e.g., 203,495 = 200,000 + 3,000 + 400 + 90 + 5).	1M-E1-02
	7	Compare two whole numbers.	1M-E1-01
	8	Order three or more whole numbers.	1M-E1-01
	9	Make models that represent mixed numbers.	1M-F1-06
	10	Identify symbols, words, or models that represent mixed numbers.	1M-F1-06
	11	Use mixed numbers in contextual situations.	1M-F6-01
	12	Compare two unit fractions (e.g., ½ to 1/5) or proper or mixed numbers with like denominators.	1M-E1-01
	13	Order three or more unit fractions or proper or improper fractions with like denominators.	1M-E1-01
	14	Use decimals in contextual situations.	1M-E1-03
	15	Compare two decimals.	1M-E1-01
	16	Order three or more decimals.	1M-E1-01
	17	Determine the equivalency among decimals, fractions, and percents (e.g., 49/100 = 0.49 = 49%).	1M-E5-02
	18	Identify all whole number factors and pairs of factors for a given whole number through 144.	1M-E4-01 1M-E5-03
	19	Determine multiples of a given whole number with products through 144.	1M-E4-01
2. Numerical Operations	1	Add whole numbers.	1M-F4-02
	2	Subtract whole numbers.	1M-F4-02
	3	Select the grade-level appropriate operation to solve word problems.	1M-E3-02
	4	Solve word problems using grade-level appropriate operations and numbers.	1M-E2-01 1M-E3-02

	5	Multiply multi-digit numbers by two-digit numbers.	1M-E3-01
	6	Divide with one-digit divisors.	1M-E3-01
	7	State multiplication and division facts through 12s.	1M-E3-01
	8	Demonstrate the associative property of multiplication.	*
	9	Apply grade-level appropriate properties to assist in computation.	*
	10	Apply the symbol: • and ( ) for multiplication, and ≤, ≥ .	3M-F5-01
	11	Use grade-level appropriate mathematical terminology.	*
	12	Add or subtract fractions with like denominators, no regrouping.	1M-E5-01
	13	Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.	1M-E4-05
3. Estimation	1	Solve grade-level appropriate problems using estimation.	1M-E6-01 1M-E6-02
	2	Use estimation to verify the reasonableness of a calculation (e.g., Is 3284 x 343 = 1200 reasonable?).	1M-E6-02 1M-F7-04
	3	Estimate length and weight using both U.S. customary and metric units.	5M-E1-03
	4	Estimate and measure for distance.	1M-E6-03 5M-E3-02

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 4

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Construct a single-bar graph, line graph or two-set Venn diagram with appropriate labels and title from organized data.	2M-E1-01 2M-F3-02
	3	Interpret graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.	2M-E1-02 2M-F2-06
	4	Answer questions based on graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.	2M-E1-02 2M-F1-02 2M-F2-06
	5	Identify the mode(s) of given data.	2M-E3-01
	6	Formulate predictions from a given set of data.	2M-E2-01
	7	Solve contextual problems using graphs, charts, and tables.	2M-F2-08
2. Probability	1	Name the possible outcomes for a probability experiment.	2M-E4-01
	2	Describe the probability of events as being more likely, less likely, equally likely, unlikely, certain, impossible, fair or unfair.	2M-E5-03 2M-E5-05
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-E5-01
	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-E2-02
	6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).	2M-E5-01 6M-F2-02
	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01
3. Discrete Mathematics – Systematic Listing and Counting	1	Find all possible combinations when one item is selected from each of two sets containing up to three objects (e.g., How many outfits can be made with 3 pants and 2 tee shirts?).	2M-E4-02 5M-F4-01
4. Vertex-Edge Graphs	1	Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 4

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.	3M-E1-03
	2	Extend a grade-level appropriate iterative pattern.	3M-E1-01 3M-F2-01 5M-E6-02
	3	Create grade-level appropriate iterative patterns.	3M-E1-02 5M-E6-01
2. Concept 2: Functions and Relationships	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).	3M-E4-02 3M-E4-02
3. Algebraic Representations	1	Evaluate expressions involving the four basic operations by substituting given whole numbers for the variable.	3M-E3-02 3M-E4-03 3M-E4-04
	2	Use variables in contextual situations.	3M-E3-01
	3	Solve one-step equations with one variable represented by a letter or symbol using multiplication of whole numbers (e.g., $12 = n \times 4$).	3M-E7-01
4. Analysis of Change	1	Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).	3M-E4-01
	2	Make simple predictions based on a variable (e.g., increase homework time as you progress through the grades).	3M-E4-02

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 4

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Identify the properties of 2-dimensional figures using appropriate terminology.	4M-E1-01
	2	Identify models or illustrations of prisms, pyramids, cones, cylinders, and spheres.	4M-E1-03
	3	Draw points, lines, line segments (open or closed endpoints), rays, or angles.	*
	4	Classify angles (e.g., right, acute, obtuse, straight).	4M-E2-04
	5	Classify triangles as right, acute, or obtuse.	4M-E2-02
	6	Identify congruent geometric shapes.	4M-E2-06
	7	Identify similar shapes.	4M-E2-06
	8	Draw a 2-dimensional shape that has line symmetry.	4M-E3-03 4M-P3-01
2. Transformation of Shapes	1	Demonstrate translation using geometric figures.	4M-E3-01 4M-E3-02
	2	Identify a tessellation.	*
3. Coordinate Geometry	1	Name the coordinates of a point plotted in the first quadrant.	2M-F2-05
4. Measurement - Units of Measure Geometric Objects	1	Identify the appropriate measure of accuracy for the area of an object (e.g., sq. feet or sq. miles).	5M-E2-02
	2	Compute elapsed time using a clock (e.g., hours and minutes since or until…) or a calendar (e.g., days, weeks, years since or until…).	5M-F2-06
	3	Select an appropriate tool to use in a particular measurement situation.	5M-E2-01
	4	Approximate measurements to the appropriate degree of accuracy.	*
	5	Compare units of measure to determine *more* or *less* relationships including: • length - yards and miles, meters and kilometers, and • weight - pounds and tons, grams and kilograms.	5M-F2-07
	6	State equivalent relationships (e.g., 3 teaspoons = 1 tablespoon, 16 cups = 1 gallon, 2000 pounds = 1 ton).	5M-F2-08
	7	Compare the weight of two objects using both U.S. customary and metric units.	5M-E1-04

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

	8	Determine the perimeter of simple polygons (e.g., square, rectangle, triangle).	5M-E4-02
	9	Determine the area of squares and rectangles.	5M-E4-02
	10	Differentiate between perimeter and area of quadrilaterals.	5M-E3-01

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.	6M-F3-01
	2	Develop an algorithm to calculate the perimeter of simple polygons.	5M-E4-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Draw a conclusion from a Venn diagram.	6M-E3-01
	2	Identify simple valid arguments using *if…then* statements based on graphic organizers (e.g., 2-set Venn diagrams and pictures).	6M-E3-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 5

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Make models that represent improper fractions.	1M-F1-04
	2	Identify symbols, words, or models that represent improper fractions.	1M-F1-06
	3	Use improper fractions in contextual situations.	1M-E1-03
	4	Compare two proper fractions or improper fractions with like denominators.	1M-E1-01
	5	Order three or more unit fractions, proper or improper fractions with like denominators, or mixed numbers with like denominators.	1M-E1-01
	6	Compare two whole numbers, fractions, and decimals (e.g., 1/2 to 0.6).	1M-E1-01
	7	Order whole numbers, fractions, and decimals.	1M-E1-01
	8	Determine the equivalency between and among fractions, decimals, and percents in contextual situations.	1M-E5-02
	9	Identify all whole number factors and pairs of factors for a number.	1M-E4-02 1M-E5-03
	10	Recognize that 1 is neither a prime nor a composite number.	1M-E4-04
	11	Sort whole numbers (through 50) into sets containing only prime numbers or only composite numbers.	1M-E4-04
2. Numerical Operations	1	Select the grade-level appropriate operation to solve word problems.	*
	2	Solve word problems using grade-level appropriate operations and numbers.	1M-E2-02 1M-E3-02
	3	Multiply whole numbers.	1M-E3-01
	4	Divide with whole numbers.	1M-E3-01
	5	Demonstrate the distributive property of multiplication over addition.	*
	6	Demonstrate the addition and multiplication properties of equality.	*
	7	Apply grade-level appropriate properties to assist in computation.	*
	8	Apply the symbol "[ ]" to represent grouping.	3M-F5-01
	9	Use grade-level appropriate mathematical terminology.	*
	10	Simplify fractions to lowest terms.	*
	11	Add or subtract proper fractions and mixed numbers with like denominators with regrouping.	1M-E5-01

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 5

	12	Add or subtract decimals.	1M-E5-01
	13	Multiply decimals.	1M-E5-01
	14	Divide decimals.	1M-E5-01
	15	Simplify numerical expressions using the order of operations with grade- appropriate operations on number sets.	1M-E4-05
3. Estimation	1	Solve grade-level appropriate problems using estimation.	1M-E6-01 1M-E6-02
	2	Use estimation to verify the reasonableness of a calculation (e.g., Is 4.1 x 2.7 about 12?).	1M-E6-02 1M-F7-03
	3	Round to estimate quantities.	1M-E6-02
	4	Estimate and measure for area and perimeter.	5M-E3-02
	5	Compare estimated measurements between U.S. customary and metric systems (e.g., A yard is about a meter.).	5M-E1-04

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 5

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Construct a double-bar graph, line plot, frequency table, or three-set Venn diagram with appropriate labels and title from organized data.	2M-E1-01 2M-F3-02
	3	Interpret graphical representations and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.	2M-E1-02 2M-F2-06
	4	Answer questions based on graphical representations, and data displays including bar graphs (including double-bar), circle graphs, frequency tables, three-set Venn diagrams, and line graphs that display continuous data.	2M-E1-02 2M-F1-02 2M-F2-06
	5	Identify the mode(s) and mean (average) of given data.	2M-E3-01
	6	Formulate reasonable predictions from a given set of data.	2M-E2-01
	7	Compare two sets of data related to the same investigation.	2M-E2-02 2M-E2-03
	8	Solve contextual problems using graphs, charts, and tables.	2M-F2-08
2. Probability	1	Name the possible outcomes for a probability experiment.	2M-E4-01
	2	Describe the probability of events as being: • certain (represented by "1"), • impossible, (represented by "0"), or • neither certain nor impossible (represented by a fraction less than 1).	2M-E5-03
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-E5-01
	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-E2-02
	6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).	2M-E5-01 6M-F2-02
	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01

3. Discrete Mathematics – Systematic Listing and Counting	1	Find all possible combinations when one item is selected from each of two sets of different items, using a systematic approach. (e.g., shirts: tee shirt, tank top, sweatshirt; pants: shorts, jeans).	2M-E4-02
4. Vertex-Edge Graphs	1	Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).	*

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.	3M-E1-03
	2	Extend a grade-level appropriate iterative pattern.	3M-E1-01 5M-E6-02 3M-F2-01
	3	Solve grade-level appropriate iterative pattern problems.	3M-E1-03 3M-E1-04 5M-E6-02
2. Functions and Relationships	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).	3M-E4-01 3M-E4-02 5M-E6-01
3. Algebraic Representations	1	Evaluate expressions involving the four basic operations by substituting given decimals for the variable.	3M-E3-02 3M-E4-03 3M-E4-04
	2	Use variables in contextual situations.	3M-E3-01
	3	Solve one-step equations with one variable represented by a letter or symbol (e.g., $15 = 45 \div n$).	3M-E7-01
4. Analysis of Change	1	Describe patterns of change: • constant rate (speed of movement of the hands on a clock), and • increasing or decreasing rate (rate of plant growth).	3M-E4-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 5

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Recognize regular polygons.	4M-E1-01
	2	Draw 2-dimensional figures by applying significant properties of each (e.g., Draw a quadrilateral with two sets of parallel sides and four right angles.).	4M-E1-03
	3	Sketch prisms, pyramids, cones, and cylinders.	4M-E1-03
	4	Identify the properties of 2- and 3-dimensional geometric figures using appropriate terminology and vocabulary.	4M-E1-02
	5	Draw points, lines, line segments, rays, and angles with appropriate labels.	*
	6	Recognize that all pairs of vertical angles are congruent.	*
	7	Classify triangles as scalene, isosceles, or equilateral.	*
	8	Recognize that a circle is a 360º rotation about a point.	*
	9	Identify the diameter, radius, and circumference of a circle.	4M-P4-04
	10	Understand that the sum of the angles of a triangle is 180°.	*
	11	Draw two congruent geometric figures.	4M-E2-01
	12	Draw two similar geometric figures.	4M-E2-01
	13	Identify the lines of symmetry in a 2-dimensional shape.	4M-E3-03 4M-P3-01
2. Transformation of Shapes	1	Demonstrate reflections using geometric figures.	4M-E3-01 4M-E3-02
	2	Describe the transformations that created a tessellation.	*
3. Coordinate Geometry	1	Graph points in the first quadrant on a grid using ordered pairs.	2M-F2-05
4. Measurement - Units of Measure Geometric Objects	1	State an appropriate measure of accuracy for a contextual situation (e.g., What unit of measurement would you use to measure the top of your desk?).	5M-E2-01 5M-E2-02
	2	Draw 2-dimensional figures to specifications using the appropriate tools (e.g., Draw a circle with a 2-inch radius.).	4M-E1-03
	3	Determine relationships including volume (e.g., pints and quarts, milliliters and liters).	5M-E3-03

	4	Convert measurement units to equivalent units within a given system (U.S. customary and metric) (e.g., 12 inches = 1 foot; 10 decimeters = 1 meter).	5M-E1-02
	5	Solve problems involving the perimeter of convex polygons.	4M-E4-01
	6	Determine the area of figures composed of two or more rectangles on a grid.	4M-E4-01
	7	Solve problems involving the area of simple polygons.	4M-E4-01
	8	Describe the change in perimeter or area when one attribute (length, width) of a rectangle is altered.	5M-E5-01

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.	6M-F3-01
	2	Design simple algorithms using whole numbers.	5M-P3-01 6M-E2-01
	3	Develop an algorithm or formula to calculate areas of simple polygons.	5M-E4-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Construct *if…then* statements.	6M-E3-01
	2	Identify simple valid arguments using *if … then* statements based on graphic organizers (e.g., 3-set Venn diagrams and pictures).	6M-E3-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 6

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Express fractions as ratios, comparing two whole numbers (e.g., ¾ is equivalent to 3:4 and 3 to 4).	1M-E1-03 3M-E8-02
	2	Compare two proper fractions, improper fractions, or mixed numbers.	1M-E1-01
	3	Order three or more proper fractions, improper fractions, or mixed numbers.	1M-E1-01
	4	Determine the equivalency between and among fractions, decimals, and percents in contextual situations.	1M-E5-02
	5	Identify the greatest common factor for two whole numbers.	1M-E4-03
	6	Determine the least common multiple for two whole numbers.	1M-E4-03
	7	Express a whole number as a product of its prime factors, using exponents when appropriate.	1M-E4-02
2. Numerical Operations	1	Select the grade-level appropriate operation to solve word problems.	*
	2	Solve word problems using grade-level appropriate operations and numbers.	1M-E3-02
	3	Apply grade-level appropriate properties to assist in computation.	*
	4	Apply the symbols for "…" or "⎯" to represent repeating decimals and ":" to represent ratios, superscripts as exponents.	3M-F5-01
	5	Use grade-level appropriate mathematical terminology.	*
	6	Simplify fractions to lowest terms.	*
	7	Add or subtract proper fractions and mixed numbers with unlike denominators with regrouping.	1M-E5-01
	8	Demonstrate the process of multiplication of proper fractions using models.	1M-E5-01
	9	Multiply proper fractions.	1M-E5-01
	10	Multiply mixed numbers.	1M-E5-01
	11	Demonstrate that division is the inverse of multiplication of proper fractions.	1M-E2-03
	12	Divide proper fractions.	1M-E5-01
	13	Divide mixed numbers.	1M-E5-01
	14	Solve problems involving fractions or decimals (including money) in contextual situations.	1M-E3-02

	15	Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.	1M-E4-05
3. Estimation	1	Solve grade-level appropriate problems using estimation.	1M-E6-02
	2	Use estimation to verify the reasonableness of a calculation (e.g., Is 5/9 x 3/7 more than 1?).	1M-E6-04
	3	Round to estimate quantities in contextual situations (e.g., round up or round down).	1M-E6-02
	4	Estimate and measure for the area and perimeter of polygons using a grid.	5M-E3-02
	5	Verify the reasonableness of estimates made from calculator results within a contextual situation.	1M-E6-04

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL Strand 2: Data Analysis, Probability, and Discrete Mathematics			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Construct a histogram, line graph, scatter plot, or stem-and-leaf plot with appropriate labels and title from organized data.	2M-E1-01
	3	Interpret simple displays of data including double bar graphs, tally charts, frequency tables, circle graphs, and line graphs.	2M-E1-02
	4	Answer questions based on simple displays of data including double bar graphs, tally charts, frequency tables, circle graphs, and line graphs.	2ME1-02
	5	Find the mean, median (odd number of data points), mode, range, and extreme values of a given numerical data set.	2M-E3-02
	6	Identify a trend (variable increasing, decreasing, remaining constant) from displayed data.	2M-E3-02
	7	Compare trends in data related to the same investigation.	2M-E2-02 2M-E2-03
	8	Solve contextual problems using bar graphs, tally charts, and frequency tables.	2M-F2-08

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

2. Probability	1	Name the possible outcomes for a probability experiment.	2M-E4-01
	2	Express probabilities of a single event as a decimal.	2M-E5-04
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-E5-01
	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-E2-02
	6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes, cards).	2M-E5-01
	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01
3. Discrete Mathematics – Systematic Listing and Counting	1	Determine all possible outcomes involving a combination of three sets of three items, using a systematic approach (e.g., 3 different shirts, 3 different pairs of pants, and 3 different belts).	2M-E4-01
	2	Determine all possible arrangements given a set with four or fewer objects using a systematic list, table or tree diagram when order is not important.	2M-E4-02
4. Vertex-Edge Graphs	1	Find the shortest route on a map from one site to another (vertex-edge graph).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	PO	ITEM DESCRIPTION	
1. Patterns	1	Communicate a grade-level appropriate recursive pattern, using symbols or numbers.	3M-E1-03
	2	Extend a grade-level appropriate iterative pattern.	3M-E1-01 5M-E6-02 5M-E6-03
	3	Solve grade-level appropriate iterative pattern problems.	3M-E1-03 3M-E1-04 5M-E6-01 5M-E6-02
2. Functions and Relationships	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).	3M-E4-01 3M-E4-02

3. Algebraic Representations	1	Evaluate expressions involving the four basic operations by substituting given fractions for the variable (e.g., $n+3$, when $n= \frac{1}{2}$).	3M-E3-02 3M-E4-03 3M-E4-04
	2	Use variables in contextual situations.	3M-E3-01
	3	Translate a written phrase to an algebraic expression (e.g., The quotient of m and 5 is $\frac{m}{5} or\ m \div 5$.).	3M-E3-03
	4	Translate a phrase written in context into an algebraic expression (e.g., Write an expression to describe the situation: John has x pieces of candy and buys three more. $x + 3$).	3M-E3-03
	5	Solve one-step equations with one variable represented by a letter or symbol, using inverse operations with whole numbers.	3M-E7-01 3M-E7-02
4. Analysis of Change	1	Identify values on a given line graph or scatter plot (e.g., Given a line showing wages earned per hour, what is the wage at five hours?).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	PO	ITEM DESCRIPTION	
1. Geometric Properties	1	Classify polygons by their attributes (e.g., number of sides, length of sides, angles, parallelism, perpendicularity).	4M-E1-01
	2	Draw a geometric figure showing specified properties, such as parallelism and perpendicularity.	4M-E2-01 4M-E2-05
	3	Classify prisms, pyramids, cones, and cylinders by base shape and lateral surface shape.	4M-P1-02
	4	Classify 3-dimensional figures by their attributes.	4M-E1-01
	5	Compare attributes of 2-dimensional figures with 3-dimensional figures.	4M-E1-02
	6	Draw triangles with appropriate labels.	*
	7	Identify supplementary or complementary angles.	4M-E2-03
	8	Identify the diameter, radius, and circumference of a circle or sphere.	*
	9	Draw a 2-dimensional shape with a given number of lines of symmetry.	4M-E3-03 4M-P3-01

2. Transformation of Shapes	1	Identify reflections and translations using pictures.	4M-E3-02
	2	Perform elementary transformations to create a tessellation.	4M-E3-02
3. Coordinate Geometry	1	Graph a polygon in the first quadrant using ordered pairs.	2M-F2-05
	2	State the missing coordinate of a given figure in the first quadrant of a coordinate grid using geometric properties (e.g., Find the coordinates of the missing vertex of a rectangle when two adjacent sides are drawn.).	*
4. Measurement - Units of Measure Geometric Objects	1	Determine the appropriate measure of accuracy within a system for a given contextual situation (e.g., Would you measure the length of your bedroom wall using inches or feet?).	5M-E2-02
	2	Determine the appropriate tool needed to measure to the needed accuracy.	5M-E2-01
	3	Determine a linear measurement to the appropriate degree of accuracy.	5M-E2-03
	4	Measure angles using a protractor.	*
	5	Convert within a single measurement system (U.S. customary or metric) (e.g., How many ounces are equivalent to 2 pounds?).	5M-E1-02
	6	Solve problems involving the perimeter of polygons.	4M-E4-01
	7	Determine the area of triangles.	*
	8	Distinguish between perimeter and area in contextual situation.	5M-E3-01
	9	Solve problems for the areas of parallelograms (includes rectangles).	4M-E4-01
	10	Identify parallelograms having the same perimeter or area.	4M-E4-03
	11	Determine the actual measure of objects using a scale drawing or map.	4M-P2-05

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 6

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.	6M-F3-01
	2	Analyze algorithms for computing with decimals.	5M-P3-01 6M-E2-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Solve a simple logic problem from given information (e.g., Which of three different people live in which of three different colored houses?).	6M-E3-02

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 7

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Express fractions as terminating or repeating decimals.	1M-E5-02
	2	Identify the greatest common factor for a set of whole numbers.	1M-E4-03
	3	Determine the least common multiple for a set of whole numbers.	1M-E4-03
	4	Choose the appropriate signed real number to represent a contextual situation.	1M-P2-06
	5	Recognize the absolute value of a number used in contextual situations.	1M-P2-02
	6	Locate integers on a number line.	1M-E1-01
	7	Order integers.	1M-E1-01
	8	Classify rational numbers as natural, whole, or integers.	1M-E4-04
2. Numerical Operations	1	Add integers.	1M-E5-01
	2	Subtract integers.	1M-E5-01
	3	Select the grade-level appropriate operation to solve word problems.	*
	4	Solve word problems using grade-level appropriate operations and numbers.	1M-E3-02
	5	Multiply integers.	1M-E5-01
	6	Divide integers.	1M-E5-01
	7	Apply grade-level appropriate properties to assist in computation.	*
	8	Apply the symbols + and – to represent positive and negative, and "│ │" to represent absolute value.	3M-F5-01
	9	Use grade-level appropriate mathematical terminology.	*
	10	Calculate the percent of a given number.	*
	11	Convert numbers expressed in standard notation to scientific notation and vice versa (positive exponents only).	1M-E5-04
	12	Simplify numerical expressions using the order of operations with grade- appropriate operations on number sets.	1M-E4-05
3. Estimation	1	Solve grade-level appropriate problems using estimation.	1M-E6-02
	2	Use estimation to verify the reasonableness of a calculation (e.g., Is –2.5 x 18 about –50?).	1M-E6-04
	3	Determine whether an estimation of an area is approximately equal to the actual measure.	1M-E6-04

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 7

	4	Determine whether an estimation of an angle is approximately equal to the actual measure.	1M-E6-04
	5	Determine whether an estimation of the circumference of a circle is approximately equal to the actual measure.	1M-E6-04
	6	Verify the reasonableness of estimates made from calculator results within a contextual situation.	1M-E6-04

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Construct a circle graph with appropriate labels and title from organized data.	2M-E1-03
	3	Determine when it is appropriate to use histograms, line graphs, double bar graphs, and stem-and-leaf plots.	2M-E1-03
	4	Interpret data displays including histograms, stem-and-leaf plots, circle graphs, and double line graphs.	2M-E1-02
	5	Answer questions based on data displays including histograms, stem-and-leaf plots, circle graphs, and double line graphs.	2M-E1-02
	6	Find the mean, median, mode, and range of a given numerical data set.	2M-E3-02 2M-P2-02
	7	Interpret trends from displayed data.	2M-E1-02
	8	Compare trends in data related to the same investigation.	2M-E2-02 2M-E2-03
	9	Solve contextual problems using histograms, line graphs of continuous data, double bar graphs, and stem-and-leaf plots.	2M-E1-02
2. Probability	1	Determine the probability that a specific event will occur in a single stage probability experiment (e.g., Find the probability of drawing a red marble from a bag with 3 red, 5 blue, and 9 black marbles.).	2M-E4-01
	2	Compare probabilities to determine the fairness of a contextual situation (e.g. If John wins when two or greater shows after a six-sided number cube is rolled and Joaquin wins otherwise, is this a fair game?).	*
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-E5-01

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 7

	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-E2-02
	6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes, cards).	2M-E5-01 6M-F2-02
	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01
3. Discrete Mathematics – Systematic Listing and Counting	1	Determine all possible outcomes involving the combination of up to three sets of objects (e.g., How many outfits can be made with 3 pants, 2 tee shirts and 2 pairs of shoes?).	2M-E4-01
	2	Determine all possible arrangements of a given set, using a systematic list, table, tree diagram, or other representation.	2M-E4-02
4. Vertex-Edge Graphs	1	Find the shortest circuit on a map that makes a tour of specified sites (vertex edge graph).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate a grade-level appropriate recursive pattern, using symbols or numbers.	3M-E1-03
	2	Extend a grade-level appropriate recursive pattern.	3M-E1-01 5M-E6-02 5M-E6-03 5M-E6-04
	3	Solve grade-level appropriate recursive pattern problems.	3M-E1-03 3M-E1-04 5M-E6-01 5M-E6-02
2. Functions and Relationships	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).	3M-E4-01 3M-E4-02

3. Algebraic Representations	1	Evaluate an expression containing two variables by substituting integers for the variable (e.g., $7x + m$, when x = -4 and m = 12).	3M-E3-02 3M-E4-03 3M-E4-04
	2	Use variables in contextual situations.	3M-E3-01
	3	Translate a written sentence into a one-step, one-variable algebraic equation.	3M-E3-03
	4	Translate a sentence written in context into an algebraic equation involving one operation.	3M-E3-03
	5	Solve one-step equations using inverse operations with positive rational numbers (e.g., $\frac{2}{3}n = 6$).	3M-E7-01 3M-E7-02
4. Analysis of Change	1	Analyze change in various linear contextual situations.	3M-E5-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Draw a geometric figure showing specified properties (e.g., Draw an obtuse triangle.).	4M-E2-01
	2	Classify 3-dimensional solids by their configuration and properties (e.g., parallelism, perpendicularity and congruency).	4M-E1-01
	3	Identify the net (2-dimensional representation) that corresponds to a rectangular prism, cone, or cylinder.	4M-P1-03
	4	Distinguish between length, area, and volume, using 2- and 3-dimensional geometric figures.	5M-E3-01
	5	Draw polygons with appropriate labels.	*
	6	Identify the angles created by two lines and a transversal.	4M-E2-03
	7	Recognize the relationship between central angles and intercepted arcs.	*
	8	Identify arcs and chords of a circle.	4M-P4-02
	9	Model the triangle inequality theorem using manipulatives.	*
	10	Identify corresponding parts of congruent polygons as congruent.	*

2. Transformation of Shapes	1	Identify rotations about a point, using pictorial models.	4M-E3-02 4M-P6-03
	2	Recognize simple single rotations, translations or reflections on a coordinate grid.	*
3. Coordinate Geometry	1	Graph data points in (x, y) form in any quadrant of a coordinate grid.	3M-E7-03
	2	State the missing coordinate of a given figure in any quadrant of a coordinate grid using geometric properties (e.g., Find the coordinates of the missing vertex of a rectangle when two adjacent sides are drawn.).	*
4 Measurement - Units of Measure Geometric Objects	1	Identify the appropriate unit of measure for the volume of an object (e.g., cubic inches or cubic cm).	5M-E2-02
	2	Measure to the appropriate degree of accuracy.	5M-E2-03
	3	Convert a measurement from U.S. customary to metric, and vice versa.	5M-E1-04
	4	Solve problems involving the circumference of a circle.	4M-E4-01
	5	Solve problems involving the area of a circle.	4M-E4-01
	6	Solve problems for the areas of parallelograms, triangles, and circles.	4M-E4-01
	7	Identify polygons having the same perimeter or area.	4M-E4-02
	8	Compare estimated to actual lengths based on scale drawings or maps.	4M-P2-05

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 7

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.	6M-F3-01
	2	Analyze algorithms for computing with fractions.	5M-P3-01 6M-E2-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Solve a logic problem using multiple variables.	6M-E3-02

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 8

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Locate rational numbers on a number line.	1M-E1-01
	2	Identify irrational numbers.	1M-E1-01
	3	Classify real numbers as rational or irrational.	1M-E4-04
2. Numerical Operations	1	Select the grade-level appropriate operation to solve word problems.	1M-E3-02
	2	Solve word problems using grade-level appropriate operations and numbers.	1M-E3-02
	3	Determine the square of an integer.	1M-E3-02
	4	Determine the square root of an integer.	1M-E5-05
	5	Identify squaring and finding square roots as inverse operations.	1M-E5-05
	6	Apply grade-level appropriate properties to assist in computation.	*
	7	Apply the symbols "√" to represent square root, "±" to represent roots, and "{}" as grouping symbols.	3M-F5-01
	8	Use grade-level appropriate mathematical terminology.	*
	9	Calculate the missing value in a percentage problem.	*
	10	Convert standard notation to scientific notation, and vice versa.	1M-E5-04
	11	Simplify numerical expressions using the order of operations with grade- appropriate operations on number sets.	1M-E4-05
3. Estimation	1	Solve grade-level appropriate problems using estimation.	1M-E6-02
	2	Use estimation to verify the reasonableness of a calculation (e.g., Is 32 the square root of 64?).	1M-E6-04
	3	Express answers to the appropriate place or degree of precision (e.g., time, money).	5M-E2-03
	4	Verify the reasonableness of estimates made from calculator results within a contextual situation.	1M-E6-04

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 8

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-01
	2	Construct box-and-whisker plots.	2M-E1-01
	3	Determine the appropriate type of graphical display for a given data set.	2M-E1-03
	4	Interpret box-and-whisker plots, circle graphs, and scatter plots.	2M-E1-02
	5	Answer questions based on box-and-whisker plots, circle graphs, and scatter plots.	2M-E1-02
	6	Solve problems in contextual situations using the mean, median, mode, and range of a given data set.	2M-E3-02 2M-P2-02
	7	Formulate reasonable predictions based on a given set of data.	2M-P2-03
	8	Compare trends in data related to the same investigation.	2M-E2-02 2M-E2-03
	9	Solve contextual problems using scatter plots, box-and-whiskers plots, and double line graphs of continuous data.	2M-E1-02
	10	Evaluate the effects of missing or incorrect data on the results of an investigation (e.g., Susie's teacher recorded a 39 instead of a 93 for her last quiz, what will happen to Susie's average?).	2M-E2-04
	11	Identify a line of best fit for a scatter plot.	2M-P3-01
	12	Distinguish between causation and correlation.	*
2. Probability	1	Determine the probability that a specific event will occur in a 2-stage probability experiment.	2M-E4-01
	2	Solve contextual situations using probability (e.g., If the probability of Michelle making a free throw is 0.25, what is the probability that she will make three free throws in a row?).	2M-E5-02
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-E5-01
	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-E2-02
	6	Distinguish between independent and dependent events.	2M-P6-03

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 8

	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01
3. Discrete Mathematics – Systematic Listing and Counting	1	Determine all possible outcomes involving the combination of two or more sets of objects (e.g., If you roll a six-sided number cube 4 times, how many possible outcomes are possible?).	2M-E4-01
	2	Determine all possible arrangements given a set (e.g., How many ways can you arrange a set of 7 books on a shelf?).	2M-E4-02
4. Vertex-Edge Graphs	1	Solve contextual problems represented by vertex-edge graphs.	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Patterns	1	Communicate a grade-level appropriate iterative or recursive pattern, using symbols or numbers.	3M-E1-03
	2	Extend a grade-level appropriate iterative or recursive pattern.	3M-E1-01 5M-E6-02 5M-E6-03 5M-E6-04
	3	Solve grade-level appropriate iterative or recursive pattern problems.	3M-E1-03 3M-E1-04
2. Functions and Relationships	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).	3M-E4-01 3M-E4-02
	2	Distinguish between linear and nonlinear functions, given graphic examples.	3M-E6-01
	3	Determine whether a graph or table is related to a given equation of the form $y=ax^2$ where 'a' is a natural number.	*
	4	Identify independent and dependent variables for a contextual situation.	3M-P1-01
3. Algebraic Representations	1	Evaluate algebraic expressions by substituting rational values for variables [e.g., $2(ab+ac+bc)$, when a = 2, b = 3/5, and c = 4].	3M-E3-02 3M-E4-03 3M-E4-04
	2	Use variables in contextual situations.	3M-E3-01

	3	Translate a written sentence or phrase into an algebraic equation or expression, and vice versa (e.g., Three less than twice a number is $2n$-3.).	3M-E3-03
	4	Translate a sentence written in context into an algebraic equation involving two operations.	3M-E3-03
	5	Translate a contextual situation into an algebraic inequality (e.g., Joe earns more than $5.00 an hour; therefore, $x > 5$).	3M-E3-04
	6	Identify an equation or inequality that represents a contextual situation.	3M-E3-03 3M-E3-04
	7	Solve one-step equations with rational numbers as coefficients or as solutions.	3M-E7-01 3M-E7-02
	8	Solve one-step equations that model contextual situations.	3M-E7-01 3M-E7-02
	9	Solve two-step equations with rational coefficients and integer solutions (e.g., $3x + 5 = 11$, $4x - 20 = 8$).	3M-E7-01
	10	Graph an inequality on a number line.	*
	11	Solve a simple algebraic proportion.	3M-E8-03
	12	Solve applied problems using the Pythagorean theorem.	4M-P2-03
4. Analysis of Change	1	Identify the slope of a line as the rate of change (the ratio of rise over run).	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
GRADE 8

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Draw a model that demonstrates basic geometric relationships such as parallelism, perpendicularity, similarity/proportionality, and congruence.	4M-E2-01
	2	Draw 3-dimensional figures by applying properties of each (e.g., parallelism, perpendicularity, congruency).	4M-E1-02
	3	Recognize the 3-dimensional figure represented by a net.	4M-P1-03
	4	Represent the surface area of rectangular prisms and cylinders as the area of their net.	4M-P2-05
	5	Draw regular polygons with appropriate labels.	*
	6	Identify the properties of angles created by a transversal intersecting two parallel lines (e.g., corresponding angles are congruent).	*
	7	Recognize the relationship between inscribed angles and intercepted arcs.	*
	8	Identify tangents and secants of a circle.	4M-P4-02
	9	Determine whether three given lengths can form a triangle.	*
	10	Identify corresponding angles of similar polygons as congruent and sides as proportional.	*
2. Transformation of Shapes	1	Identify the planar geometric figure that is the result of a given rigid transformation.	4M-P3-04
	2	Model a simple transformation on a coordinate grid (e.g., Translate right four units and down two units.).	4M-E3-02
3. Coordinate Geometry	1	Use a table of values to graph a linear equation.	3M-E7-03 3M-P4-01
	2	Determine the midpoint given two points on a number line.	4M-P2-06
	3	Determine the distance between two points on a number line.	4M-P2-06
4. Measurement - Units of Measure Geometric Objects	1	Solve problems for the area of a trapezoid.	4M-E4-01 5M-E4-02
	2	Solve problems involving the volume of rectangular prisms and cylinders.	4M-E4-01 5M-E4-02
	3	Calculate the surface area of rectangular prisms or cylinders.	4M-P2-01
	4	Identify rectangular prisms and cylinders having the same volume.	*

	5	Find the measure of a missing interior angle in a triangle or quadrilateral.	*
	6	Solve problems using ratios and proportions, given the scale factor.	*
	7	Calculate the length of a side, given two similar triangles.	*

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Describe how to use a proportion to solve a problem in context.	3M-E8-01 5M-P3-01 6M-E1-01
	2	Analyze algorithms.	6M-E2-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Solve a logic problem given the necessary information.	6M-E3-02
	2	Identify simple valid arguments using *if…then* statements (e.g., All squares are rectangles. If quadrilateral ABCD is a rectangle, is it a square?).	6M-P2-02
	3	Model a contextual situation using a flow chart.	6M-E3-01
	4	Verify the Pythagorean theorem using an area dissection argument.	*

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
HIGH SCHOOL

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 1: Number Sense and Operations			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Number Sense	1	Classify real numbers as members of one or more subsets: natural, whole, integers, rational, or irrational numbers.	1M-P1-01
	2	Identify properties of the real number system: commutative, associative, distributive, identity, inverse, and closure.	1M-P1-02
	3	Distinguish between finite and infinite sets of numbers.	1M-P1-04
2. Numerical Operations	1	Select the grade-level appropriate operation to solve word problems.	*
	2	Solve word problems using grade-level appropriate operations and numbers.	*
	3	Simplify numerical expressions including signed numbers and absolute values.	1M-P2-03 1M-P2-06 3M-P6-01
	4	Apply subscripts to represent ordinal position.	*
	5	Use grade level-appropriate mathematical terminology.	*
	6	Compute using scientific notation.	1M-P2-08
	7	Simplify numerical expressions using the order of operations.	3M-P6-01
3. Estimation	1	Solve grade-level appropriate problems using estimation.	1M-P2-07
	2	Determine if a solution to a problem is reasonable.	1M-P2-04
	3	Determine rational approximations of irrational numbers.	1M-P2-01

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
HIGH SCHOOL

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 2: Data Analysis, Probability, and Discrete Mathematics			
CONCEPT	PO	ITEM DESCRIPTION	
1. Data Analysis (Statistics)	1	Formulate questions to collect data in contextual situations.	2M-F1-02
	2	Organize collected data into an appropriate graphical representation.	2M-P1-01 2M-P5-03
	3	Display data as lists, tables, matrices, and plots.	2M-P2-01
	4	Construct equivalent displays of the same data.	2M-P1-02
	5	Identify graphic misrepresentations and distortions of sets of data.	2M-P1-06
	6	Identify which of the measures of central tendency is most appropriate in a given situation.	2M-P1-05 2M-E3-03
	7	Make reasonable predictions based upon linear patterns in data sets or scatter plots.	2M-P3-02
	8	Make reasonable predictions for a set of data, based on patterns.	2M-P3-02
	9	Draw inferences from charts, tables, graphs, plots, or data sets.	2M-P1-03
	10	Apply the concepts of mean, median, mode, range, and quartiles to summarize data sets.	2M-P11-01
	11	Evaluate the reasonableness of conclusions drawn from data analysis.	2M-P1-04
	12	Recognize and explain the impact of interpreting data (making inferences or drawing conclusions) from a biased sample.	2M-P4-03
	13	Draw a line of best fit for a scatter plot.	2M-P3-01
	14	Determine whether displayed data has positive, negative, or no correlation.	2M-P11-03
	15	Identify a normal distribution.	2M-P9-01
	16	Identify differences between sampling and census.	2M-P4-01
	17	Identify differences between biased and unbiased samples.	2M-P4-02

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
HIGH SCHOOL

2. Probability	1	Find the probability that a specific event will occur, with or without replacement.	5M-P4-01 5M-P4-02 5M-P4-04
	2	Determine simple probabilities related to geometric figures.	5M-P4-03
	3	Predict the outcome of a grade-level appropriate probability experiment.	2M-E5-01
	4	Record the data from performing a grade-level appropriate probability experiment.	2M-F3-01
	5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	2M-E2-02
	6	Distinguish between independent and dependent events.	2M-P6-03
	7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	2M-F4-01
3. Discrete Mathematics – Systematic Listing and Counting	1	Determine the number of possible outcomes for a contextual event using a chart, a tree diagram, or the counting principle.	2M-P8-01
	2	Determine when to use combinations versus permutations in counting objects.	2M-P8-02 2M-P8-03
	3	Use combinations or permutations to solve contextual problems.	2M-P8-04
4. Vertex-Edge Graphs		*(Grades K-8)*	

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
HIGH SCHOOL

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 3: Patterns, Algebra, and Functions			
CONCEPT	PO	ITEM DESCRIPTION	
1. Patterns	1	Communicate a grade-level appropriate iterative or recursive pattern, using symbols or numbers.	3M-E1-03
	2	Find the nth term of an iterative or recursive pattern.	5M-P1-02
	3	Evaluate problems using basic recursion formulas.	5M-P1-03
2. Functions and Relationships	1	Determine if a relationship is a function, given a graph, table, or set of ordered pairs.	3M-P2-03
	2	Describe a contextual situation that is depicted by a given graph.	3M-P1-02
	3	Identify a graph that models a given real-world situation.	3M-P1-02
	4	Sketch a graph that models a given contextual situation.	3M-P1-03
	5	Determine domain and range for a function.	3M-P9-02
	6	Determine the solution to a contextual maximum/minimum problem, given the graphical representation.	3M-P9-02
	7	Express the relationship between two variables using tables/matrices, equations, or graphs.	3M-P2-01
	8	Interpret the relationship between data suggested by tables/matrices, equations, or graphs.	3M-P2-01
	9	Determine from two linear equations whether the lines are parallel, perpendicular, coincident, or intersecting but not perpendicular.	3M-P4-05 4M-P5-01
3. Algebraic Representations	1	Evaluate algebraic expressions, including absolute value and square roots.	3M-P6-02 3M-P6-06
	2	Simplify algebraic expressions.	3M-P6-03
	3	Multiply and divide monomial expressions with integral exponents.	3M-P6-07
	4	Translate a written expression or sentence into a mathematical expression or sentence.	3M-P8-01
	5	Translate a sentence written in context into an algebraic equation involving multiple operations.	3M-P8-01
	6	Write a linear equation for a table of values.	3M-P7-01 3M-P7-02
	7	Write a linear algebraic sentence that represents a data set that models a contextual situation.	3M-P8-02

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
HIGH SCHOOL

	8	Solve linear (first degree) equations in one variable (may include absolute value).	3M-P6-09 3M-P6-14
	9	Solve linear inequalities in one variable.	3M-P6-09
	10	Write an equation of the line given: two points on the line, the slope and a point on the line, or the graph of the line.	3M-P4-04
	11	Solve an algebraic proportion.	3M-P6-13
	12	Solve systems of linear equations in two variables (integral coefficients and rational solutions).	3M-P7-03 3M-P6-15
	13	Add, subtract, and perform scalar multiplication with matrices.	3M-P6-08
	14	Calculate powers and roots of real numbers, both rational and irrational, using technology when appropriate.	3M-P6-05
	15	Simplify square roots and cube roots with monomial radicands (including those with variables) that are perfect squares or perfect cubes.	3M-P6-04
	16	Solve square root radical equations involving only one radical.	3M-P6-12
	17	Solve quadratic equations.	3M-P6-11
	18	Identify the sine, cosine, and tangent ratios of the acute angles of a right triangle.	3M-P5-01
4. Analysis of Change	1	Determine slope, x-, and y-intercepts of a linear equation.	3M-P4-03
	2	Solve formulas for specified variables.	3M-P6-10

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
HIGH SCHOOL

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 4: Geometry and Measurement			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Geometric Properties	1	Identify the attributes of special triangles. (isosceles, equilateral, right).	*
	2	Identify the hierarchy of quadrilaterals.	*
	3	Make a net to represent a 3-dimensional object.	4M-P2-05
	4	Make a 3-dimensional model from a net.	4M-P2-05
	5	Draw 2-dimensional and 3-dimensional figures with appropriate labels.	4M-P1-01
	6	Solve problems related to complementary, supplementary, or congruent angle concepts.	4M-P2-08
	7	Solve problems by applying the relationship between circles, angles, and intercepted arcs.	*
	8	Solve problems by applying the relationship between radii, diameters, chords, tangents, or secants.	*
	9	Solve problems using the triangle inequality property.	*
	10	Solve problems using special case right triangles.	4M-P2-03
	11	Determine when triangles are congruent by applying SSS, ASA, AAS, or SAS.	*
	12	Determine when triangles are similar by applying SAS, SSS, or AA similarity postulates.	4M-P2-04
	13	Construct a triangle congruent to a given triangle.	*
	14	Solve contextual situations using angle and side length relationships.	4M-P2-02
2. Transformation of Shapes	1	Sketch the planar figure that is the result of two or more transformations.	4M-P3-04
	2	Identify the properties of the planar figure that is the result of two or more transformations.	4M-P3-03
	3	Determine the new coordinates of a point when a single transformation is performed on a planar geometric figure.	4M-P3-02
	4	Determine whether a given pair of figures on a coordinate plane represents a translation, reflection, rotation, or dilation.	4M-P6-02
	5	Classify transformations based on whether they produce congruent or similar figures.	4M-P6-01
	6	Determine the effects of a single transformation on linear or area measurements of a planar geometric figure.	4M-P3-03

3. Coordinate Geometry	1	Graph a quadratic equation with lead coefficient equal to one.	*
	2	Graph a linear equation in two variables.	3M-P4-01
	3	Graph a linear inequality in two variables.	3M-P4-02
	4	Determine the solution to a system of equations in two variables from a given graph.	3M-P7-03
	5	Determine the midpoint between two points in a coordinate system.	4M-P2-06
	6	Determine changes in the graph of a linear function when constants and coefficients in its equation are varied.	3M-P3-01
	7	Determine the distance between two points in the coordinate system.	4M-P2-06
4. Measurement - Units of Measure Geometric Objects	1	Calculate the area of geometric shapes composed of two or more geometric figures.	4M-P2-07
	2	Calculate the volumes of 3-dimensional geometric figures.	4M-P2-01
	3	Calculate the surface areas of 3-dimensional geometric figures.	4M-P2-01
	4	Compare perimeter, area, or volume of figures when dimensions are changed.	4M-P4-01 5M-E5-02
	5	Find the length of a circular arc.	*
	6	Find the area of a sector of a circle.	*
	7	Solve for missing measures in a pyramid (i.e., slant height, height).	*
	8	Find the sum of the interior and exterior angles of a polygon.	*
	9	Solve scale factor problems using ratios and proportions.	*
	10	Solve applied problems using similar triangles.	4M-P2-04

*This performance objective is new to the Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL TO 1996 MATH STANDARD
HIGH SCHOOL

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL			1996 ARIZONA ACADEMIC CONTENT STANDARD: MATHEMATICS
Strand 5: Structure and Logic			
CONCEPT	**PO**	**ITEM DESCRIPTION**	
1. Algorithms and Algorithmic Thinking	1	Determine whether a given procedure for simplifying an expression is valid.	6M-P5-01 6M-P5-02
	2	Determine whether a given procedure for solving an equation is valid.	6M-P5-02
	3	Determine whether a given procedure for solving a linear inequality is valid.	6M-P5-02
	4	Select an algorithm that explains a particular mathematical process.	5M-P3-02
	5	Determine the purpose of a simple mathematical algorithm.	5M-P3-02
	6	Determine whether given simple mathematical algorithms are equivalent.	5M-P3-03 6M-P5-01
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Draw a simple valid conclusion from a given *if…then* statement and a minor premise.	6M-P2-02 4M-P4-03
	2	List related *if… then* statements in logical order.	6M-P2-04
	3	Write an appropriate conjecture given a certain set of circumstances.	6M-P4-01
	4	Analyze assertions related to a contextual situation by using principles of logic.	6M-P2-06
	5	Identify a valid conjecture using inductive reasoning.	6M-P1-02
	6	Distinguish valid arguments from invalid arguments.	6M-P2-03
	7	Create inductive and deductive arguments concerning geometric ideas and relationships, such as congruence, similarity, and the Pythagorean relationship.	*
	8	Critique inductive and deductive arguments concerning geometric ideas and relationships, such as congruence, similarity, and the Pythagorean relationship.	*

	9	Identify a counterexample for a given conjecture.	6M-P3-01
	10	Construct a counterexample to show that a given conjecture is false.	6M-P3-01
	11	State the inverse, converse, or contrapositive of a given statement.	*
	12	Determine if the inverse, converse, or contrapositive of a given statement is true or false.	6M-P2-01
	13	Construct a simple formal or informal deductive proof.	6M-P1-01
	14	Verify characteristics of a given geometric figure using coordinate formulas such as distance, mid-point, and slope to confirm parallelism, perpendicularity, and congruency.	4M-P5-02

*This performance objective is new to the Mathematics Standard Articulated by Grade Level